REMARKS

In the Office Action, the Examiner rejected claims 1-34, 51-68, 70, 72-74, and 76-78. By this paper, Applicant amends claims 1, 16, 28-31, 34, 51, and 76; cancels claims 12, 13, 27, 54, 55, 64, 66, 68, and 74; and adds new claims 79-88. These amendments do not add any new matter. Applicant respectfully requests reconsideration and allowance of all claims in view of the preceding amendments and the following remarks.

Transmittal of Evidence

Applicant hereby submits copies of the pages of the NATIONAL ELECTRICAL CODE (2002 Ed.) produced by the National Fire Protection Association, which promulgates codes and standards for electrical wiring and equipment. Applicant requests that the Examiner note that these pages of evidence are submitted as originally electronically produced, and Applicant has not added any notations or emphasis thereto. Accordingly, any marks present on the evidence are unrelated to the present discussions. Applicant respectfully requests entry of this evidence on the record.

Claim Rejections under 35 U.S.C. § 102

In the Office Action, the Examiner rejected claims 1-9, 12-21, 24-26, 64, and 66 under U.S.C. § 102(e) as being anticipated by Knox et al. (U.S. Publication No. 2004/0252421). The Examiner further rejected claims 1, 16, 27, 31, 34, and 51 under 35 U.S.C. § 102(b) as anticipated by Brown et al. (U.S. Patent No. 6,388,563). Applicant respectfully traverses these rejections.

Legal Precedent

Anticipation under 35 U.S.C. § 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under 35 U.S.C. § 102, every element of the claimed invention must be identically shown in a single reference. *In re*

Bond, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). To maintain a proper rejection under 35 U.S.C. § 102, a single reference must teach each and every limitation of the rejected claim. *Atlas Powder v. E.I. du Pont*, 750 F.2d 1569 (Fed. Cir. 1984). Accordingly, Applicant needs only point to a single element not found in the cited reference to demonstrate that the cited reference fails to anticipate the claimed subject matter. The prior art reference also must show the identical invention "in as complete detail as contained in the ... claim" to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989).

Claim Rejections Relying on the Knox Reference

The Examiner rejected independent claims 1 and 16 as anticipated by the Knox reference. Final Office Action, page 2. Elements of the claims omitted from the Knox reference are discussed below. Similar claim elements found in multiple claims will be addressed together.

The Knox reference does not disclose a modular control unit having a motor/machine connection terminal.

Independent claim 1 recites, *inter alia*, "the modular control unit comprises ... a machine connection terminal configured to enable the modular control unit to couple directly with the machine." Independent claim 16 recites, *inter alia*, "the replaceable control unit comprises ... a motor connection terminal configured to enable the replaceable control unit to couple directly with the motor."

In contrast to the above recitations, the Knox reference discloses a user interface module 2 for interacting with a motor overload protector (MOP) 1. *See* Knox, ¶ [0103]. This user interface 2 does not control the motor to which the MOP 1 is applied. The Examiner asserted that the micro-controller 75 in the modular control unit 2 constitutes control circuitry configured to control the machine. Final Office Action, page 2. Specifically, the Examiner stated that "the circuitry of microcomputer 75 allows the user to enter control commands and receive status updates of the motor being controlled- par.

0104-0109." *Id.* The Examiner further clarified this statement by alleging that "[t]he machine being controlled is the low voltage motor mentioned in paragraph 0002." *Id.*

This assessment of the Knox reference is clearly erroneous. From the very passage cited by the Examiner, the Knox reference discloses that the micro-controller 75 controls the user interface 2, not a motor. *See* Knox, ¶ [0104]. Indeed, the Knox application is directed to "a digital programmable motor overload protector, which provides low noise, low distortion, and high accuracy data acquisition for low voltage motors." Knox, ¶ [0002]. The user interface 2 enables a user to view the status of the motor and the overload relay. *See* Knox, ¶ [0108]. A digital signal processor (DSP) 55 in the MOP 1 controls the MOP's operations. *See* Knox, ¶ [0101]. The user interface 2 merely provides an interface with the DSP 55 and does not control the motor. *See* Knox, ¶¶ [0220]-[0234]. Specifically, the micro-controller 75 in the user interface 2 operates to initiate the user interface 2, at which time control of the user interface 2 is taken over by the DSP 55. *See* Knox, ¶¶ [0220] and [0231]. To reiterate, a user interface does not constitute a control unit for controlling a motor as recited in the present claims.

In addition to not disclosing a motor/machine controller, the user interface module 2 which the Examiner has repeatedly cited as the supposed "motor controller" of Knox does not have a connection terminal to enable a direct connection to the motor/machine to which the MOP 1 is applied. Indeed, the user interface module 2 is merely a user interface for the MOP 1, and as such the only connection terminal on the user interface module 2 is configured to couple the interface 2 to the MOP 1. *See* Knox, FIG. 3; *see also* ¶ [0092] (stating that the user interface 2 couples with the MOP 1 via the Smart Card connectors 24). For at least these reasons, the Knox reference does not anticipate independent claims 1 or 16, or their dependent claims.

For at least these reasons, the Knox reference does not anticipate independent claims 1, 16, 27, 31, 34, or 51, or their dependent claims. Applicant therefore respectfully requests removal of the rejections of independent claims 1, 16, 27, 31, 34,

and 51, and their dependent claims, under 35 U.S.C. § 102 as these claims are clearly not anticipated by Knox.

The Knox reference does not disclose a base having a short-circuit protection device.

Independent claim 16 recites, *inter alia*, "a motor mountable base comprising a short-circuit tripping disconnect." Dependent claim 2 recites, "wherein the motor protection device comprises a short-circuit protective device."

The Examiner stated that Knox discloses a short-circuit protective device. *See* Final Office Action, pages 3 and 4. Specifically, the Examiner argued that a ground fault is a type of short-circuit and that Knox discloses ground fault protection. Final Office Action, page 3. Applicant does not dispute that a ground fault is a type of short-circuit. However, Knox does not disclose ground fault protection. In contrast, the Knox reference merely discloses "sensing and measuring of three phase electrical currents as well as ground fault current." Knox, ¶ [0010] (emphasis added). The mere existence of a ground phase clearly does not disclose short-circuit protection, as short-circuits are likely to occur between the ground phase and another phase. That is, the fact that a ground phase monitor is present in the Knox reference is irrelevant to the discussion of whether the Knox reference discloses a short-circuit protection device.

Indeed, the Knox reference is directed to a motor overload protector. *See* Knox, Title. An overload does not include a short-circuit. In support of this statement, the Examiner is directed to the definition of "overload" from the National Electrical Code (NEC), which reads:

> **Overload.** Operation of equipment in excess of normal, full-load rating, or of a conductor in excess of rated ampacity that, when it persists for a sufficient length of time, would cause damage or dangerous overheating. A fault, such as a short circuit or ground fault, is not an overload.

Exhibit A, p. 70-37, right column. Further, in discussing motor and branch-circuit overload protection (i.e., the use for which the Knox device was designed), the NEC states that overload "does not include short circuits or ground faults." Exhibit A, p. 70-292, right column (emphasis added). For at least these reasons, the Knox reference does not anticipate independent claim 16, dependent claim 2, or their dependent claims.

In light of the above-cited deficiencies, among others, Applicant respectfully requests removal of the rejections of independent claims 1 and 16, and their dependent claims, under 35 U.S.C. § 102, as these claims are clearly not anticipated by Knox.

Claim Rejections Relying on the Brown Reference

The Examiner rejected independent claims 1, 16, 27, 31, 34, and 51 as anticipated by the Brown reference. Final Office Action, page 7. Independent claim 27 has been cancelled; therefore, the rejection of this claim is moot. Elements of the claims omitted from the Brown reference are discussed below. Similar claim elements found in multiple claims will be addressed together.

The Brown reference does not disclose a modular motor/machine control unit coupleable to a motor/machine protection base.

Although Applicant does not intend or suggest that the specification should be read into the claims, Applicant submits that the specification provides context that may be useful in examining the present claims. Embodiments of the present application relate to on-machine control of a machine. Application, page 1, lines 26-27. The on-machine control involves a machine-mountable base unit having a machine protection device and a modular, replaceable control unit. Application, page 1, lines 27-28. The machine protection device may include a short-circuit protection device. Application, page 5, lines 20-22. Furthermore, the control unit may be selected from a variety of different modular control units having different control features. Application, page 6, lines 15-17. As the control unit is configured to control the machine, it may include an output connector for interfacing with the machine. Application, page 9, lines 18-20.

Accordingly, independent claims 1, 16, 31, 34, and 51 recite various combinations of a base having a motor protection device and a control unit coupled to the base having motor/machine control operability. In contrast, the Brown reference does not disclose at least these elements which are generally recited in the independent claims.

For an exemplary illustration of the deficiencies of the Brown reference, independent claim 1 will be particularly examined. Claim 1 recites:

> 1. A controller for a machine, comprising:
> a machine mountable base comprising a motor protection device housed in the base and a network terminal configured to connect the base to a central or remote system via a power and data distribution structure; and
> a modular control unit replaceably mountable to the machine mountable base, wherein the modular control unit comprises control circuitry configured to control the machine and a machine connection terminal configured to enable the modular control unit to couple directly with the machine.

In rejecting claim 1 the Examiner stated that Brown discloses:

> [A] motor controller [Fig. 1, 100; col. 1 lines 46-52], comprising; a modular base [Fig. 1, 300] comprising motor protection circuitry [col. 9 lines 3-14]; ... and a modular motor control unit [Fig. 1, 200] coupled to the modular base [col. 2 lines 24-45] and comprising motor control circuitry [col. 3 lines 36-44] cooperatively operable with the motor protection circuitry.

Office Action, page 7 (emphasis in original).

In spite of the Examiner's assertions, the Brown reference does not disclose "a machine mountable base comprising a motor protection device housed in the base" and "a modular control unit replaceably mountable to the machine mountable base, wherein the modular control unit comprises control circuitry configured to control the machine" as recited in claim 1 (emphasis added). Rather, the emergency stop device 100 of Brown includes a switch unit 200 mounted to a control unit 300. The control unit 300 is coupled

to a machine and controls the power source for the machine. *See* Brown, col. 4, lines 42-44 and 61-62. The modular switch unit 200, which is coupled to the machine-mounted control unit 300, switches from a normal state to an emergency state when necessary. Brown, col. 3, lines 18-21. Upon the switch unit 200 switching to the emergency state, the control unit 300 controls the machine's power source. Brown, col. 3, lines 24-29.

In summary, the Brown device includes a base 300 which controls the machine's power supply during an emergency and a modular unit 200 which indicates an emergency state to the base 300. Clearly, this disclosure does not anticipate the present claims directed to a motor protection base and a modular machine control unit coupled to the base. For at least these reasons, the Brown reference does not anticipate independent claims 1, 16, 27, 31, 34, or 51, or their dependent claims.

The Brown reference does not disclose a modular control unit having a motor/machine connection terminal.

Independent claim 1 recites, *inter alia*, "the modular control unit comprises … a machine connection terminal configured to enable the modular control unit to couple directly with the machine." Independent claim 16 recites, *inter alia*, "the replaceable control unit comprises … a motor connection terminal configured to enable the replaceable control unit to couple directly with the motor."

In contrast to the above recitations, the Knox reference discloses a switch unit 200 mounted to a control unit 300. *See* Brown, FIG. 1. The control unit 300 controls the machine's power source in the event of an emergency. Brown, col. 3, lines 24-29. However, the switch unit 200 mounted to the control unit 300 does not control the machine. Even assuming, *arguendo*, that some form of indirect control may be inferred from the Brown reference, which Applicant does not concede, the switch device 200 clearly does not have a motor/machine connection terminal to enable a direct connection of the switch 200 to the machine. Indeed, the only connector 210 on the switch 200 is for mating with the control unit 300. Brown, col. 3, lines 44-45. For at least these reasons,

the Brown reference does not anticipate independent claims 1 or 16, or their dependent claims.

The Brown reference does not disclose direct control of a motor/machine by a modular control unit.

Independent claim 31 recites, *inter alia*, "a control unit comprising control circuitry configured to directly control at least one machine in the machine system." Independent claim 34 recites, *inter alia*, "the modular control unit comprises control circuitry configured to directly control at least one machine in the system of distributed machines."

As discussed above, the Brown reference does not disclose a modular motor/machine control unit coupleable to a motor/machine protection base. Even assuming, *arguendo*, that some form of indirect control may be inferred from the Brown reference, which Applicant does not concede, the switch device 200 clearly does not disclose direct control of the machine by the switch unit 200. While the control unit 300 may directly control the machine via controlling the machine's power supply, the control unit 300 cannot be properly construed as the recited "control unit" because the Brown reference would then fail to disclose a base. For at least these reasons, the Brown reference does not anticipate independent claims 31 or 34, or their dependent claims.

The Brown reference does not disclose a modular control unit directly coupled to a controlled machine/motor.

Independent claim 51 recites, *inter alia*, "a connector coupling the modular motor control unit directly to the motor to enable control of the motor by the modular motor control unit."

Again, as discussed above, the Brown reference does not disclose a modular motor control unit coupleable to a motor protection base. Further, the Brown reference clearly does not disclose that the switch unit 200, which the Examiner has identified as the recited "control unit," is directly coupled to a controlled motor. Rather, the control

unit 300 may be coupled to the power source of the protected motor, and the switch unit 200 is coupled to the control unit 300. For at least these reasons, the Brown reference does not anticipate independent claim 51 or its dependent claims.

In view of the above-cited deficiencies, Applicant respectfully requests removal of the rejections of independent claim claims 1, 16, 31, 34, and 51 under 35 U.S.C. § 102, as these claims are clearly not anticipated by Brown.

Claim Rejections under 35 U.S.C. § 103(a)

The Examiner rejected claims 1, 2-9, 12-13, 15-16, 17-21, 24, 26-28, 30-32, 34, 51-56, 59, 60-68, 70, 72-74, and 76-78 under 35 U.S.C. § 103(a) as being unpatentable over Haudry et al. (U.S. Patent No. 6,879,230). In addition, the Examiner rejected claims 10-11 and 22-23 under 35 U.S.C. § 103(a) as being unpatentable over Knox in view of Hollenbeck (U.S. Patent No. 5,557,182). The Examiner further rejected claims 10-11, 22-23, and 57-58 under 35 U.S.C. § 103(a) as being unpatentable over Haudry et al. in view of Hollenbeck. Applicant respectfully traverses these rejections

Legal Precedent

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d. 1430 (Fed. Cir. 1990). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes all of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227

U.S.P.Q. 972 (B.P.A.I. 1985). The Examiner must provide objective evidence, rather than subjective belief and unknown authority, of the requisite motivation or suggestion to combine or modify the cited references. *In re Lee*, 61 U.S.P.Q.2d. 1430 (Fed. Cir. 2002). Moreover, a statement that the proposed modification would have been "'well within the ordinary skill of the art'" based on individual knowledge of the claimed elements cannot be relied upon to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993); *In re Kotzab*, 217 F.3d 1365, 1371, 55 U.S.P.Q.2d. 1313, 1318 (Fed. Cir. 2000); *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 U.S.P.Q.2d. 1161 (Fed. Cir. 1999).

It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 U.S.P.Q. 769, 779 (Fed. Cir. 1983); M.P.E.P. § 2145. Moreover, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. 349 (CCPA 1959); *see* M.P.E.P. § 2143.01(VI). If the proposed modification or combination would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984); *see* M.P.E.P. § 2143.01(V).

Claim Rejections Relying on the Haudry Reference

Of the claims rejected as obvious over Haudry, claims 1, 16, 27, 31, 34, and 51 are independent. Independent claim 27 has been cancelled; therefore, the rejection of this claim is moot. Elements of the claims omitted from the Haudry reference are discussed below. Similar claim elements found in multiple claims will be addressed together.

The Haudry reference does not disclose or suggest a modular motor/machine control unit coupleable to a motor/machine protection base.

As with the Knox and Brown references, the Haudry reference does not disclose a motor protection base and a modular machine control unit coupled to the base as generally recited in the present independent claims. Again, Applicant will illustrate the deficiencies of the Haudry reference with respect to exemplary independent claim 1. Similar reasoning is applicable to all of the independent claims. Again, claim 1 recites:

> 1. A controller for a machine, comprising:
> a machine mountable base comprising a motor protection device housed in the base and a network terminal configured to connect the base to a central or remote system via a power and data distribution structure; and
> a modular control unit replaceably mountable to the machine mountable base, wherein the modular control unit comprises control circuitry configured to control the machine and a machine connection terminal configured to enable the modular control unit to couple directly with the machine.

In the rejection of claim 1, the Examiner stated that Haudry discloses:

> [A] motor controller [Fig. 1], comprising: a modular base [Fig. 1, housing 1] comprising motor protection circuitry [Fig. 1; 14, 16, 18]; …and a modular motor control unit [Fig. 1; comprising protection and control module 2 with removable control or communication module 3] coupled to the modular base [Fig. 3; col. 2 lines 34-38; col. 3 lines 5-15] and comprising motor control circuitry [col. 1 lines 24-33; col. 4 lines 7-16] cooperatively operable with the motor protection circuitry.

Final Office Action, pages 10-11 (emphasis in original).

As with the Knox reference, the Examiner has misinterpreted the disclosure of Haudry to include motor/machine control which is not disclosed in the Haudry reference. Specifically, the Examiner cited two passages in the Haudry reference which allegedly disclose motor/machine control circuitry. In contrast to the Examiner's interpretation, the

first passage discloses that the communication module 3 communicates with the protection and control module 2. *See* Haudry, col. 1, lines 24-28; *see also* col. 3, lines 16-20. The protection and control module 2 in turn monitors the current through the switch and signals to a control part in the housing 1 when a fault is detected. *See* Haudry, col. 2, lines 40-50. Despite the Examiner's suggestion to the contrary, the Haudry reference does not disclose that either module 2 or 3 controls a machine as recited in the present independent claims.

The second passage cited by the Examiner describes an embodiment of the communication module 3 in which the module 3 may "control a display" or "provide information about the motor load to a controller." Haudry, col. 4, lines 11-15. Again, this passage does not disclose motor/machine control as the Examiner asserted. On the contrary, this passage states that information may be sent from the communication module 3 to a controller, thus indicating that the module itself is not a machine controller.

In addition, the Examiner has not suggested that these deficiencies would be obvious in view of the Haudry reference. Rather, the Examiner argued that the Haudry reference explicitly discloses these elements of the claimed invention and merely lacks the disclosure that the housing 1 is mounted on a motor. Final Office Action, page 11. For at least these reasons, the Examiner has not set forth a *prima facie* case of obviousness over Haudry with respect to independent claims 1, 16, 31, 34, or 51, or their dependent claims.

The Haudry reference does not disclose a direct connection with or control over the motor/machine.

Independent claim 1 recites, *inter alia*, "the modular control unit comprises ... a machine connection terminal configured to enable the modular control unit to couple directly with the machine." Independent claim 16 recites, *inter alia*, "the replaceable control unit comprises ... a motor connection terminal configured to enable the replaceable control unit to couple directly with the motor." Independent claim 31 recites, *inter alia*, "a control unit comprising control circuitry configured to directly control at

least one machine in the machine system." Independent claim 34 recites, *inter alia*, "the modular control unit comprises control circuitry configured to directly control at least one machine in the system of distributed machines." Independent claim 51 recites, *inter alia*, "a connector coupling the modular motor control unit directly to the motor to enable control of the motor by the modular motor control unit." Dependent claim 70 recites, *inter alia*, "the control unit comprises an output connector configured to couple with the at least one machine via a cable." Dependent claim 72 recites, *inter alia*, "the modular control unit comprises an output connector configured to couple with the at least one machine via a cable."

In the Final Office Action, the Examiner stated that "Haudry discloses that the modular control unit comprises an output connector [Fig. 3, power terminal blocks 13b] configured to couple with the machine/at least one of the machines [the motor being controlled col. 4 lines 7-16; the cable is the power cables connected to power terminal block 13b to supply the motor; col. 1 lines 63-67]." Final Office Action, page 12.

The Examiner's rationale is erroneous and contradictory to previous statements made in the rejection of the independent claims in view of Haudry. That is, the Examiner stated that Haudry discloses "a modular motor control unit [Fig. 1; comprising protection and control module 2 with removable control or communication module 3]." *Id.* at page 11 (emphasis in original). Accordingly, if the protection and control module 2 and the communication module 3 make up the motor control unit of Haudry, then the motor control unit clearly does not include the power terminal blocks 13b which are located in the housing 1. *See* Haudry, col. 1, lines 65-67; *see also* FIGS. 1-3. Rather, the Examiner identified the housing 1 as the recited base. Final Office Action, pages 10-11. For at least these reasons, the Examiner has not set forth a *prima facie* case of obviousness over Haudry with respect to independent claims 1, 16, 31, 34, or 51; dependent claims 70 or 72; or any of their dependent claims.

In view of the cited deficiencies of the Examiner's rejections under 35 U.S.C. § 103 in view of the Haudry reference, Applicant respectfully requests removal of the

rejections of independent claims 1, 16, 31, 34, and 51, and their dependent claims, under 35 U.S.C. § 103, as these claims are clearly not obvious in view of the Haudry reference.

Claim Rejections Relying on the Hollenbeck Reference in Combination with either the Knox reference or the Haudry reference

The Examiner relied on Knox and Hollenbeck in the rejection of dependent claims 10-11 and 22-23. Similarly, the Examiner relied on Haudry and Hollenbeck in the rejection of dependent claims 10-11, 22-23, and 57-58. Applicant respectfully submits that the present claims are allowable at least based on their dependence from allowable base claims, as discussed above. Claims 10 and 11 depend from claim 1, claims 22 and 23 depend from claim 16, and claims 57 and 58 depend from claim 34. The Knox and/or Haudry references fail to disclose all the elements of independent claims 1, 16, and 34, as set forth above, and the Hollenbeck reference fails to obviate the deficiencies of the primary reference with respect to these independent claims. Accordingly, Applicant respectfully requests removal of the rejections of dependent claims 10, 11, 22, 23, 57, and 58 under 35 U.S.C. § 103 as these claims are clearly not obvious over Knox and/or Haudry in view of Hollenbeck.

New Claims

As indicated above, Applicant has added new independent claims 79 and 83, as well as new dependent claims 80-82 and 84-88. New independent claim 79 recites, *inter alia*, "a second connector configured to couple with the machine to enable control of the machine by the modular control unit." Accordingly, for at least the reasons set forth above, Applicant believes independent claim 79 is allowable over the cited references.

New independent claim 83 recites:

> 83. A machine controller, comprising:
> a modular base, comprising:
> a machine protection device comprising
> machine protection circuitry;

a wiring panel comprising an input/output device interface and a network interface; and

a modular mounting receptacle comprising a first electrical connector; and

a modular control unit, comprising:

machine control circuitry;

a machine interface configured to enable the modular control unit to couple directly with a machine being controlled;

a control panel; and

a second electrical connector through which the modular control unit is electrically coupled to the modular base to enable cooperative operability of the machine control circuitry with the machine protection circuitry.

As discussed above, none of the references cited by the Examiner disclose or suggest a machine controller having a machine protection base with a modular machine controller coupled thereto. Furthermore, none of the cited references disclose or suggest "a machine interface configured to enable the modular control unit to couple directly with a machine being controlled" as recited in new claim 83. For at least these reasons, Applicant believes the new claims are allowable over the cited references.

Conclusion

Applicant respectfully submits that all pending claims should be in condition for allowance. However, if the Examiner believes certain amendments are necessary to clarify the present claims or if the Examiner wishes to resolve any other issues by way of a telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

Date: November 17, 2008

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Exhibit A

NFPA 70
National Electrical Code
2002 Edition

An International Electrical Code™ Series

NFPA, 1 Batterymarch Park, PO Box 9101, Quincy, MA 02269-9101
An International Codes and Standards Organization

Metal-Enclosed Power Switchgear. A switchgear assembly completely enclosed on all sides and top with sheet metal (except for ventilating openings and inspection windows) containing primary power circuit switching, interrupting devices, or both, with buses and connections. The assembly may include control and auxiliary devices. Access to the interior of the enclosure is provided by doors, removable covers, or both.

Motor Control Center. An assembly of one or more enclosed sections having a common power bus and principally containing motor control units.

Multioutlet Assembly. A type of surface, flush, or free-standing raceway designed to hold conductors and receptacles, assembled in the field or at the factory.

Nonautomatic. Action requiring personal intervention for its control. As applied to an electric controller, nonautomatic control does not necessarily imply a manual controller, but only that personal intervention is necessary.

Nonincendive Circuit. A circuit, other than field wiring, in which any arc or thermal effect produced under intended operating conditions of the equipment is not capable, under specified test conditions, of igniting the flammable gas–air, vapor–air, or dust–air mixture.

FPN: For test conditions, see ANSI/ISA-S12.12-1994, *Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations.*

Nonincendive Field Wiring. Wiring that enters or leaves an equipment enclosure and, under normal operating conditions of the equipment, is not capable, due to arcing or thermal effects, of igniting the flammable gas–air, vapor–air, or dust–air mixture. Normal operation includes opening, shorting, or grounding the field wiring.

Nonlinear Load. A load where the wave shape of the steady-state current does not follow the wave shape of the applied voltage.

FPN: Electronic equipment, electronic/electric-discharge lighting, adjustable-speed drive systems, and similar equipment may be nonlinear loads.

Outlet. A point on the wiring system at which current is taken to supply utilization equipment.

Outline Lighting. An arrangement of incandescent lamps or electric-discharge lighting to outline or call attention to certain features such as the shape of a building or the decoration of a window.

Overcurrent. Any current in excess of the rated current of equipment or the ampacity of a conductor. It may result from overload, short circuit, or ground fault.

FPN: A current in excess of rating may be accommodated by certain equipment and conductors for a given set of conditions. Therefore the rules for overcurrent protection are specific for particular situations.

Overload. Operation of equipment in excess of normal, full-load rating, or of a conductor in excess of rated ampacity that, when it persists for a sufficient length of time, would cause damage or dangerous overheating. A fault, such as a short circuit or ground fault, is not an overload.

Panelboard. A single panel or group of panel units designed for assembly in the form of a single panel, including buses and automatic overcurrent devices, and equipped with or without switches for the control of light, heat, or power circuits; designed to be placed in a cabinet or cutout box placed in or against a wall, partition, or other support; and accessible only from the front.

Plenum. A compartment or chamber to which one or more air ducts are connected and that forms part of the air distribution system.

Power Outlet. An enclosed assembly that may include receptacles, circuit breakers, fuseholders, fused switches, buses, and watt-hour meter mounting means; intended to supply and control power to mobile homes, recreational vehicles, park trailers, or boats or to serve as a means for distributing power required to operate mobile or temporarily installed equipment.

Premises Wiring (System). That interior and exterior wiring, including power, lighting, control, and signal circuit wiring together with all their associated hardware, fittings, and wiring devices, both permanently and temporarily installed, that extends from the service point or source of power, such as a battery, a solar photovoltaic system, or a generator, transformer, or converter windings, to the outlet(s). Such wiring does not include wiring internal to appliances, luminaires (fixtures), motors, controllers, motor control centers, and similar equipment.

Qualified Person. One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training on the hazards involved.

Raceway. An enclosed channel of metal or nonmetallic materials designed expressly for holding wires, cables, or busbars, with additional functions as permitted in this *Code*. Raceways include, but are not limited to, rigid metal conduit, rigid nonmetallic conduit, intermediate metal conduit, liquidtight flexible conduit, flexible metallic tubing, flexible metal conduit, electrical nonmetallic tubing, electrical metallic tubing, underfloor raceways, cellular concrete floor raceways, cellular metal floor raceways, surface raceways, wireways, and busways.

(1) Be enclosed either by an enclosed controller or by a raceway, be not more than 3.0 m (10 ft) in length, and, for field installation, be protected by an overcurrent device on the line side of the tap conductor, the rating or setting of which shall not exceed 1000 percent of the tap conductor ampacity
(2) Have an ampacity of at least one-third that of the feeder conductors, be suitably protected from physical damage or enclosed in a raceway, and be not more than 7.5 m (25 ft) in length
(3) Have the same ampacity as the feeder conductors

Exception: Feeder taps over 7.5 m (25 ft) long. In high-bay manufacturing buildings [over 11 m (35 ft) high at walls], where conditions of maintenance and supervision ensure that only qualified persons service the systems, conductors tapped to a feeder shall be permitted to be not over 7.5 m (25 ft) long horizontally and not over 30.0 m (100 ft) in total length where all of the following conditions are met:

(a) The ampacity of the tap conductors is not less than one-third that of the feeder conductors.
(b) The tap conductors terminate with a single circuit breaker or a single set of fuses conforming with (1) Part IV, where the load-side conductors are a branch circuit, or (2) Part V, where the load-side conductors are a feeder.
(c) The tap conductors are suitably protected from physical damage and are installed in raceways.
(d) The tap conductors are continuous from end-to-end and contain no splices.
(e) The tap conductors shall be 6 AWG copper or 4 AWG aluminum or larger.
(f) The tap conductors shall not penetrate walls, floors, or ceilings.
(g) The tap shall not be made less than 9.0 m (30 ft) from the floor.

430.29 Constant Voltage Direct-Current Motors — Power Resistors. Conductors connecting the motor controller to separately mounted power accelerating and dynamic braking resistors in the armature circuit shall have an ampacity not less than the value calculated from Table 430.29 using motor full-load current. If an armature shunt resistor is used, the power accelerating resistor conductor ampacity shall be calculated using the total of motor full-load current and armature shunt resistor current.

Armature shunt resistor conductors shall have an ampacity of not less than that calculated from Table 430.29 using rated shunt resistor current as full-load current.

Table 430.29 Conductor Rating Factors for Power Resistors

Time in Seconds		Ampacity of Conductor in Percent of Full-Load Current
On	Off	
5	75	35
10	70	45
15	75	55
15	45	65
15	30	75
15	15	85
Continuous Duty		110

III. Motor and Branch-Circuit Overload Protection

430.31 General. Part III specifies overload devices intended to protect motors, motor-control apparatus, and motor branch-circuit conductors against excessive heating due to motor overloads and failure to start.

Overload in electrical apparatus is an operating overcurrent that, when it persists for a sufficient length of time, would cause damage or dangerous overheating of the apparatus. It does not include short circuits or ground faults.

These provisions shall not be interpreted as requiring overload protection where it might introduce additional or increased hazards, as in the case of fire pumps.

FPN: For protection of fire pump supply conductors, see 695.6.

The provisions of Part III shall not apply to motor circuits rated over 600 volts, nominal.

FPN No. 1: For over 600 volts, nominal, see Part X.

FPN No. 2: See Annex D, Example No. D8.

430.32 Continuous-Duty Motors.

(A) More Than 1 Horsepower. Each continuous-duty motor rated more than 1 hp shall be protected against overload by one of the means in 430.32(A)(1) through (A)(4).

(1) Separate Overload Device. A separate overload device that is responsive to motor current. This device shall be selected to trip or shall be rated at no more than the following percent of the motor nameplate full-load current rating:

Motors with a marked service factor 1.15 or greater	125%
Motors with a marked temperature rise 40°C or less	125%
All other motors	115%

Modification of this value shall be permitted as provided in 430.32(C). For a multispeed motor, each winding connection shall be considered separately.

Where a separate motor overload device is connected so that it does not carry the total current designated on the motor nameplate, such as for wye-delta starting, the proper percentage of nameplate current applying to the selection or setting of the overload device shall be clearly designated on